

## BIBLIOGRAPHICAL NOTICES.

*Histoire Naturelle des Poissons d'eau douce de l'Europe Centrale.*  
Par L<sup>s</sup>. Agassiz. 1<sup>er</sup> Livraison, contenant les Salmones. Oblong folio. Neuchatel, 1839.

*Natural History and Illustrations of the British Salmonidæ.* By Sir William Jardine, Bart. Part First. Elephant Folio. Edinburgh, 1839.

*On the Growth of the Salmon in Freshwater.* By William Yarrell, F.L.S., V.P.Z.S., with Six coloured Illustrations of the Fish of the Natural Size. Oblong Folio. Van Voorst. London, 1839.

The titles of the works which we have placed at the head of this notice will show that the interest which the Natural History of the Salmonidæ has of late excited, has in no way decreased either in this country or on the Continent, and we sincerely trust that the individuals who are now devoting their talents to the elucidation of the habits and structure of this family of fishes, of much importance commercially and possessing great scientific interest, may be enabled to carry on their investigations until the complete history of the subject is attained.

At the commencement of the present century, the history of the British fishes composing this family had for a considerable period remained stationary. But then, various experiments began to be tried, with the view of ascertaining the time required by the fry or smelts to attain a certain weight after leaving the rivers, which was very satisfactorily established, showing a remarkably rapid increase in weight and size. This fact, previously surmised, had given rise to the conclusion, that the young on hatching from the ova increased with equal rapidity, while the history of a little fish provincially known in Scotland as the *Parr*, created much discussion, and no little difference of opinion, whether it was a young state of the Salmon or a full-grown and perfect fish. The immense decrease of the Salmon fisheries also called for investigation; and although the habits of the species which composed the chief staple of the fisheries were practically known to the Taxmen, the proprietors or their factors were not sufficiently conversant with their growth, migration, or breeding, either to impose salutary restrictions in the leases, or to check the indiscriminate and over-killing of the fish, which was almost the sole cause of the decrease; the latter caused the appointment of various Parliamentary Committees, which published reports containing an

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immense but undigested mass of information, and which might have elicited much more had the members of them given some attention to the obscure points in the history of the family before examining the witnesses. The difficulty of investigating the subject is we acknowledge great, and when we know that it has been undergoing strict research by persons well qualified for the task for several years without complete information being obtained, we feel even more anxious to understand the mystery which involves the "lives and loves" of these very valuable inhabitants of our rivers and oceans. Mr. Yarrell, Sir W. Jardine, Dr. Parnell, and Mr. Shaw of Drumlanrig are all either now, or have been very lately working on this subject, and the fruits of their researches will eventually leave little to be accomplished. Sir Francis Mackenzie of Garloch is about to form extensive stews for the breeding of salmon, and to re-perform some of Mr. Shaw's experiments. The experiments of the latter observer detailed to the Royal Society of Edinburgh, and published in Professor Jameson's *Journal*, are of the greatest importance; they have been conducted with great care, and so far as they have been prosecuted have been accompanied by results as satisfactory perhaps as we could expect from the whole difficulty of the subject. The sum of our knowledge at the present time, so far as regards the common Salmon, is, that we have hitherto been in error in considering its growth to be rapid during the first stages of its existence, and that it does not migrate until at least one year's residence in the fresh waters. On reaching the sea however the increase in size becomes very great, exceeding one pound in weight monthly. It has been further proved incontestably we think by Mr. Shaw, that the great proportion of the small fish called *Parrs*, or in the English rivers *Pinks*\*, are the first state of the young Salmon previous to its assuming the migratory dress; but the additional proposition that the *Parr* does not exist at all as a distinct fish, is extremely questionable, and still requires investigation. At present the opinions of all our best ichthyologists are in favour of its distinctness, and the minute and careful differences detailed by Dr. Parnell in his "*Fishes of the Frith of Forth*," go very far to prove everything that is wanting. The history of the other migratory fish remains nearly in the same state in which it has been for the last thirty years, though the works before us have commenced their elucidation, and some experiments are now in progress. The geographical distribution of the species has not been at all at-

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The publication of the History of the Freshwater Fishes of Central Europe by M. Agassiz has been looked forward to with interest by British ichthyologists. Some of the plates for it were engraved so far back as 1832, and the long time which it has been known to be in preparation, with the high scientific character of its author, raised the expectations of those who were studying the same subject. The first livraison of plates has now reached this country, accompanied only with simple explanations, so that we do not yet receive the views of M. Agassiz upon many of the obscure points, but can only guess at what may be his probable conclusions. The mode of publication is however otherwise excellent, each livraison being intended to contain complete illustrations of a family or group, so that the whole is brought under review at once, and is not scattered about as so commonly occurs in works which appear in numbers. The descriptive letter-press to this part is promised with the plates of the second, which are to illustrate the *Coregoni*.

The plates are lithographic, are minutely executed, and those devoted to the details of the fins, scaling, and magnified figures are very useful. A plate of details is given with each species. The others represent the fish in its various states incident to age and season. The first series show the Salmon, M. and F., in its breeding dress, and a female in the state of summer or high condition after having newly entered a river. These figures lead us to believe, what we have long suspected, that the Salmon of many of the continental rivers differed or was not identical with the common British fish. They are reduced from specimens upwards of three feet in length; at this age and size the tail in both sexes of the latter would be completely square, and the scale represented fig. 3. tab. 1 a. is fully two-thirds less. The markings in tab. 2. also differ much. Six plates are devoted to the illustration of *S. fario*. Some of the figures are of importance as showing what is to be understood by the *S. marmoratus*, Cuv., and the *S. sylvaticus* of Shrank: but with the English synonyms we cannot agree, they are given, "the Trout, the common Trout, the river Trout, the *Gillaroo*, the *Parr* (a young Trout)." Now the *Gillaroo* of Ireland still requires investigation, and we have reason to believe that it will form a distinct species. The *Parr* of Scotland has no connexion with *S. fario*\*, and the

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Seven plates illustrate two species of migratory Trout which are given under the names of *S. trutta* and *lacustris*, Linn.\*. In these we think we recognise the two British fishes which have been confounded under the provincial name of “Sea Trout.” They are very distinct in some of their states, and the form of the tail distinguishes them, together with the colours during the breeding season, but we should have preferred to have seen figures of these species when in high condition; residence in a lake may in various ways influence the form. The young of these fish constitutes the *S. albus* of Fleming. Should the *S. trutta* of this work not stand as *S. eriox* of Willughb.?

The Char are all placed under *S. umbla*, Linn., and the “Welsh Char” is given as an English synonym. Although we know the Char to vary very considerably, we are inclined to refer the British fish to two species, chiefly distinguished by the great difference in the scaling. Those figured by M. Agassiz seem all referable to the “Northern Char” of modern British writers.

*S. hucho* of the Danube, unknown in the British waters, is represented in the young and adult states, and the last plates delineate the *Thymallus vexillifer*, Agass., or Common Grayling, found only by the British ichthyologist in certain districts in England.

In looking at the list of the Salmon of Britain and Central Europe comparatively, we are prepared for a close resemblance of species; but from the work before us we perceive one species, *S. hucho* of the Danube, which does not occur in Britain or Ireland, while we find omitted the *Bull Trout* of the river Tweed, (the *S. eriox* of some authors, but not of Willughby,) and the great Trout of the Scotch, Irish, and North of England lakes. These we have no doubt in being distinct species, and it appears to us remarkable that the latter should

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be wanting to the Swiss lakes. Among the common Trout, *S. fario*, we feel inclined to adopt more species than those of the Swiss ichthyologist, but as the specimens now figured are chiefly river varieties, and certainly all one species, we are not so able to judge how the varieties in the lakes of Central Europe agree with those from the lochs of Scotland and Ireland, or how the characters which we think entitle them to separation are kept up in other localities. We shall look anxiously for the appearance of the Second Livraison and the letter-press, when we shall endeavour to enter more fully upon this curious subject; in the mean time we would wish that encouragement to the work in this country which is due to the persevering zeal of its author.

*The History of the British Salmonidæ*, by Sir W. Jardine, which stands next upon our list, is a work which has also been some time in preparation, and of which the first Fasciculus of six plates is now published\*. The figures are here drawn as near the size of life as that of the paper will admit of, and are engraved with the view of giving the effect of the newly taken fish; all the details of anatomy, scaling, and outward structure, which require most minute execution, being reserved for the volume which will contain the descriptive letter-press, and which will appear with the last fasciculus of the plates. The sketches for the colouring we know to have been nearly all made at the water's edge from the fish when newly caught; thus endeavouring to preserve an imitation of the rich tints which so quickly fade, and are lost in preserved specimens; and the department itself has been entrusted to, and performed with much credit by Mr. Bayfield of London. It is expected that the whole species found in the waters of Britain and Ireland will be illustrated in six fasciculi, or upon from thirty-six to forty plates.

On the two first plates before us are figured the Gilse or state of *S. salar* before having spawned, the second being named with a ? and considered to represent the same state of the second species of British Salmon, whose history has scarcely yet been noticed by our ichthyologists. Plate 3. represents *S. albus* of Fleming, given under that name to identify without doubt the fish alluded to in the "British Animals," and so often referred to by our modern writers. This is now known to be the young of our migratory species confused together, and in this state extremely difficult to separate. 4. is a variety of the large *S. ferox*, which we noticed M. Agassiz does not include in his list of the fishes of Central Europe; the specimen is

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*The History of the British Salmonidæ*, by Sir W. Jardine, which stands next upon our list, is a work which has also been some time in preparation, and of which the first Fasciculus of six plates is now published\*. The figures are here drawn as near the size of life as that of the paper will admit of, and are engraved with the view of giving the effect of the newly taken fish; all the details of anatomy, scaling, and outward structure, which require most minute execution, being reserved for the volume which will contain the descriptive letter-press, and which will appear with the last fasciculus of the plates. The sketches for the colouring we know to have been nearly all made at the water's edge from the fish when newly caught; thus endeavouring to preserve an imitation of the rich tints which so quickly fade, and are lost in preserved specimens; and the department itself has been entrusted to, and performed with much credit by Mr. Bayfield of London. It is expected that the whole species found in the waters of Britain and Ireland will be illustrated in six fasciculi, or upon from thirty-six to forty plates.

On the two first plates before us are figured the Gilse or state of *S. salar* before having spawned, the second being named with a ? and considered to represent the same state of the second species of British Salmon, whose history has scarcely yet been noticed by our ichthyologists. Plate 3. represents *S. albus* of Fleming, given under that name to identify without doubt the fish alluded to in the "British Animals," and so often referred to by our modern writers. This is now known to be the young of our migratory species confused together, and in this state extremely difficult to separate. 4. is a variety of the large *S. ferox*, which we noticed M. Agassiz does not include in his list of the fishes of Central Europe; the specimen is

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*The work of Mr. Yarrell* forms another interesting addition to our knowledge of the Natural History of the Salmon. The young of the Salmon (in the district where the experiments were made called Pinks) were put into an artificial lake on the property of Thomas Upton, Esq. of Ingmire Hall, having no outlet or feeder by which other fish could gain admittance. These were afterwards taken at intervals of from eleven to twenty-seven months, and Mr. Yarrell's description and plates detail and exhibit the changes and appearance of the fish when taken from the lake. The experiments of Mr. Upton and Mr. Parker corroborate in general what Mr. Shaw has so successfully proved in Scotland, and are interesting as showing the change in colouring undergone by the Pinks at the period when the clear and silvery scaling is assumed; but beyond the time when the migratory change takes place we cannot depend upon the increase of weight or size. Any one accustomed to see many Salmon in different states fresh from their native rivers, and to compare them with fish kept artificially, could at once say that Nos. 4, 5, and 6 had been kept in fresh water; this is particularly evident in the form of Nos. 4 and 5, and we would account for the comparatively fine condition of No. 6 by the lake being newly completed, and unstocked (we presume) with other fish. It is well known how much common Trout are influenced in their condition by being placed in a newly formed pond or lake. The drawings by Mr. C. Curtis illustrating Mr. Yarrell's paper were exhibited to the British Association at Newcastle, and were then much admired. The coloured engravings from these now published, are executed with great minuteness and delicacy.

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